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ABSTRACT

This research experiment studied the effect of humor versus non-humor on learning and retention of a computer-based instructional (CBI) lesson on tick identification. The experiment also surveyed the subjects' enjoyment of the lesson material, their personal experiences with ticks, and their concerns about ticks and tick-borne diseases. Undergraduate students from a statistics class (N=115) were randomly assigned to one of two treatment groups or the control group. The subjects were given a delayed post test one week after the treatment. The control group received the test only. The results indicated no significant difference between treatment groups in terms of learning and retention or in terms of enjoyment. However, the humor group was significantly more worried about ticks than the non-humor group Implications of these results are discussed. (Contains 30 references.) (Author/JLB)

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Title:

The Use of Humor in a CBI Science Lesson to Enhance Retention

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Abstract

This research experiment studied the effect of humor versus non-humor on learning and retention of a computer-based-instructional lesson on tick identification. The experiment also surveyed the subjects' enjoyment of the lesson material, their personal experiences with ticks and their concerns about ticks and tick-borne diseases. Undergraduate students from a statistics class (N=115) were randomly assigned to one of two treatment groups or the control group. The subjects were given a delayed post test one week after the treatment. The control group received the test only. The results indicated no significant difference between treatment groups in terms of learning and retention or in terms of enjoyment. However, the humor group was significantly more worried about ticks than the non-humor group. Implications of these results are discussed.

INTRODUCTION:

"The young have it too easy nowadays. In my days you were thrashed until you learnt something. Why can't they learn things the hard way, as we used to?" Fleming (1966). In response to such pronouncements, the authors of this paper wish to take issue. We think it is possible to provide effective instruction in ways that encourages students and makes the learning process enjoyable, especially in these days of emerging technologies. The strategy we focused on to test this opinion was the effect of humor on learning.

Before the mid-1970's few books were written on humor as a topic for serious research, and the majority of published works focused on humor of youngsters and adolescents. In 1976 the first International Conference on Humor and Laughter took place in Cardiff, Wales. This was met with considerable amusement and ridicule by the British press and others who pointed out the absurdity of scholars studying humor. They felt that to analyze humor, like analyzing love, was to risk destroying it (McGhee,1989).

However, subsequent international conferences followed in cities around the world, including the first annual WHIM Conference (Western--later called World-- Humor and Irony Membership Conference) in Arizona in 1980. Specialty conferences and weekend workshops also emerged bringing public awareness to the value of humor as therapy and providing techniques to develop "humor skills" (McGhee,1988).

Powell and Anderson (1985) cite more than 70 studies covering various aspects of humor and teaching, such as the value of humor, managing undesirable behavior, building self confidence, enhancing the quality of students' lives. However, in their review, the authors found few empirical studies. Those that do exist investigate the effect of humor on a variety of dependent measures with mixed results.

In general the literature on the use of humor in education can be categorized into three main areas of investigation--achievement, attention and interest, and positive attitudes:

Achievement:

Studying the cognitive "demands" of humor on children Zigler, Levine and Gould (1967) suggest that there is much gratification in the cognitive process involved in responding to humorous stimuli. There is a sense of achievement by "seeing the joke." This suggests an intrinsic motivation for humor in learning.

Hauck and Thomas (1972) found with elementary school children there was an increase in recall of incidental but not intentional material; however, intentional learning was found by Clabby (1979) to be significantly higher among "low creative" students using humorous captions. Studying the effect information acquisition in textbooks using humorous illustrations, Bryant, Brown, Silverberg and Elliot (1980) found no differences.

Kaplan and Pascoe (1977) found overall test performance in university students was not significantly different between humorous treatment and serious treatment groups, but there was better recall of humorous examples. Davies and Apter (1980) studied 285 primary grade school children who were shown a series of tape-slides. The material incorporating humor resulted in the greatest recall of information. However, in a similar experiment with university students Clark (1983) found non-significant results on retention.

Ziv (1988a.,1988b.) found significant differences in favor of learning with relevant humor compared to no humor in two studies of university students (the second replicated the first) . In each case his research was based on one-semester courses as opposed to studies by others whose experiments ranged from seven minutes to one hour.

Attention and Interest:

The effects of humor in educational television as an influence for programming selection by first and second graders was explored by Zillman and Bryant (1983). The study demonstrated that "fast-paced interspersion of humor proved more effective in attracting and sustaining an audience...than the interspersion of humor at a(n intermediate or) slow pace" (p.175). Schleicher and Bryant (1982) obtained similar results in their study of high school seniors.

Gruner (1970) and Markievicz (1974) found the effect of gaining audience attention and interest in a particular topic is enhanced with humor, although humor did not appear to affect comprehension and acceptance of a message. Warnock (1989) emphasized that humor is a good means of keeping students attentive. "Unchecked boredom can make the best of us mediocre. A timely joke or recounting an amusing happening can go a long way toward freshening up a dull meeting and putting students' minds back on track..."(p.23.)

Positive Attitude:

Fleming (1966) rationalized that humor in pictures and text can aid in developing positive attitudes and learning in students of modern languages, much like political cartoons can "sway an entire election campaign." Testing this theory, Bryant, Brown, Silverberg and Elliot (1980) studied the effects of humorous illustrations in textbook material on undergraduate students. The findings based on various dependent measures were mixed. However, the material with humorous illustrations was considered to be more enjoyable.

Sewell (1979) determined that "if comprehension is the only goal of instruction, the less expensive printed text is just as effective as the more expensive illustrated text or audio-visual presentation." (p.508.) However, his study indicated increased student enjoyment of material that incorporated humor, and he concluded that the decision of which presentation format to use should be based on personal preference and budget constraints.

Ziv (1979) found that humor plays a significant role in creating a positive class atmosphere. One of the qualities students would most hope to find in their teachers is humor. According to Hill (1988), "One of the most important functions of humor (in the classroom) is to create a positive learning environment."...When students can relate what they learn to a memorable context, whether it is visual or emotional, they are more likely to remember the information. Using jokes and anecdotes to enhance stories provides such an association." (p.20)

PURPOSE OF THE INVESTIGATION:

Much research has been conducted on various aspects of the traditional teaching and learning methods; however, with the emergence of sophisticated technologies new questions arise. Computers are increasingly integrated into total learning programs-- as a means of

accessing data bases, providing additional practice and guidance for various learning objectives, and as stand-alone lessons for independent learning and distance education.

Unfortunately, up till now, much computer courseware design has been less than innovative. The results and presentations are simply electronic workbooks, emphasizing rote learning rather an aid to higher level thinking. In addition, some people are reluctant to use computers for any purpose because they feel the technology is alien and unfriendly.

One strategy used by some educators to create a pleasant, inviting atmosphere in traditional learning environments is humor. However, humor as a topic for serious research has been minimal, and there have been no studies on humor as a strategy in Computer-Based-Instruction to enhance learning and retention.

We hypothesized that a strategy incorporating a humorous theme and humorous comments relevant to the content would help create a positive learning atmosphere, motivate students to attend to the material and aid in encoding facts and concepts better than material presented in a standard, non-humorous way.

DEFINITION:

What is humor? And what is it to be humorous? McGhee (1979) traces the Latin term "humor" to ancient, medieval and Renaissance physiology when it referred to one of four bodily fluids associated with temperament. To be in a "good mood" meant the fluids were balanced; otherwise, one would be "out of humor." (p.5). Later the term "humorist" was applied "to anyone who was highly skilled at producing amusing, incongruous, ridiculous or ludicrous ideas and events." (p.5). Freud believed humor to be important as a coping mechanism (MacHovec 1988). Freud further maintained that humor permitted adults to enjoy a childlike release from societal restrictions on behavior (Keith-Spiegel, 1972). Sorrell (1972) states "laughter lifts man above his animalistic state, sets him free, and gives his spirituality another dimension." (p.2). According to MacHovec (1988) humor is a universal characteristic.

From ancient to modern times, regardless of culture, religion, geographic location, language, ethnic identity or gender, laughter is a part of everyone's experience. MacHovec (1988) calls it "a complex psychological-emotional phenomenon." (p.3). Although what is considered funny for one person or group may not be so for another, still there are classic stories and situations that transcend cultures and time.

Definition of Humor used in this study::
In reviewing the literature, a broad range of definitions of humor was uncovered. However, to best operationalize the term, so as to distinguish the differences between treatments, the following specific attributes were selected:

A light-hearted presentation of material, rather than a facts-only scientific presentation; inclusion of whimsical, content related cartoons and animation; the use of a theme that is ridiculous, exaggerated and narrated by a character using an informal, conversational style.

METHOD:

Subjects and Setting

One hundred and fifteen volunteer undergraduate students of various majors enrolled in a statistics course at a major state university participated in this study. Each subject was randomly assigned to one of three groups.

A. Computer-Based-Instructional (CBI) Lesson on tick identification presented with humor
B. CBI Lesson on tick identification presented without humor
C. Control

Various lab times were scheduled for student conveniences. The subjects were randomly assigned to one of two treatment groups or control when they arrived at the lab. Attendance varied at the lab sessions from as many as twenty people to fewer than two.

Treatment

A computer-based instructional lesson (CBI) entitled "The Anatomy of a Hard Tick" was used as the treatment basis for this investigation. The rationale for selecting this topic was that it provided a rich source of facts and concepts; it also was a relevant topic to a health problem of growing importance--Lyme and other tick-borne diseases.

The CBI lesson was presented to two of the treatment groups. The first group, comprising 43 students, received the lesson with the inclusion of a humor as defined above. The second group, comprising 32 students, received the CBI lesson without the inclusion of any humor. A third group, comprising 40 students, served as a control and received no lesson.

Validation of Material and Test

To assess the degree of correspondence between the delayed post-test questions and the treatment content, four college science educators compared each of the fourteen test questions in terms of their appropriateness and clarity and whether or not the questions should be changed. The types of questions included matching, multiple choice and short answers. The panelists were in basic agreement on all questions. Disagreement occurred only as to whether to include more terms than numbers on questions requiring matching terms to numbers.

Validation of the Treatments

A panel of four impartial individuals who were either faculty members of the university or graduate students, assessed 55 screens of the material to be used in the humor treatment group for the degree of humor they contained based on the definition of humor described earlier. A Lickert-type scale of one to three was used with three being the highest amount of humor. The mean average of these screens was 2.4. Screens having identical material for both the humor and non-humor groups were not evaluated.

Dependent Measures

ACHIEVEMENT: One week after the initial treatments were administered, all three groups were given identical print-based tests on factual and conceptual knowledge of tick anatomy.

There were 36 responses required comprising short answers, multiple choice and matching numbers to parts.

ATTITUDE: In addition the subjects were also given an 8-item background and opinion survey to assess the influences of their background and experiences with ticks on their knowledge acquisition of the treatment material and their response to the lesson. Questions included college major, place of residence (2-items), personal "relationship" with ticks and'or Lyme disease (2-items), fear of insects, worry about ticks and tick-borne diseases and enjoyment of the lesson.

RESULTS:

Delayed Post-Test Performance

Statistical one factor analysis of variance was used to determine the difference between groups in terms of total scores on the delayed post-test. No significant difference was found between the humor and non-humor groups, only between the control group and treatment groups. Both treatment groups were equal in terms of enjoyment of the lessons. (See Figure 1.)

A two-factor analysis of variance was used to determine the differences in total scores based on having been bitten by a tick or having contracted Lyme disease. The prediction for this comparison was that personal experience with ticks may increase interest and attention in the lesson material. However, no differences were found. In addition, whereas certain regions of the country are more vulnerable to ticks and tick-borne diseases than others, the location of the participants' home residence also did not factor into the results.

On the affective measure, the extent to which participants were afraid of insects, spiders and ticks, no significant difference was indicated between any of the three groups; however, in terms of the degree to which subjects were worried about ticks and tick-borne diseases, there was a significant difference at p.<.05 with the humor group being more worried. (See Figure 2.)

TABLE 1. Comparison of Treatment Groups for Achievement

Treatment	N	Mean	sd
No Humor	32	28.37	6.83
Humor	4328.60		6.22
Control	40	13.90	6.40

TABLE 2. Comparison of Treatment Groups for Worry about Ticks and Tick-borne Diseases

Treat	N	Mean	sd	
No Humor	32	2.63		1.39
Humor	43	3.51*	1.28	
Control	40	2.85	1.37	

* p.<.05

DISCUSSION:

The results of this study indicate that there were no significant difference found between treatment strategies in terms of learning and retention. These findings are supported by Sewell (1979). His study compared comprehension and evaluation of five different treatment strategies using cartoons that accompanied textual material.

The authors speculate, however, that the scientific, sequential use of graphics was sufficiently meaningful to produce highly positive results equivalent to the humor group. These results are encouraging in that allowing the learner to choose the type of instruction would not compromise the quality of learning.

In terms of the affective results of the study, the humor group indicated significantly more worry about ticks and tick-borne disease. This finding is important since being concerned about potential dangers may imply that precautions are more likely to be taken in areas prone to high numbers of ticks and medical advice sought, if bitten. These data also may imply that another form of learning took place as a result of more humorous reinforcement of concepts. There are further have implications in terms of developing strategies for consciousness raising on various important topics.

IMPLICATIONS for FUTURE RESEARCH:

Questions are raised as a result of the current study. Would separating the groups into humor and non-humor meeting times make a difference to learning and retention? During this study only one third of the subjects received humorous material at any session. However, when there were fewer subjects in the room, or only one subject in the room, there was more outer expressions of amusement observed, such as smiles and laughs. In a group situation, perhaps there is a need for a "critical mass" attending the same types of humorous information to be amused.

Would a "warm-up" presentation help set the tone? This is a standard technique in the entertainment industry to put audiences in a receptive mood. Should humor be combined with other enhancements, such as sounds? Would learners, who have specific and direct need for the knowledge, show significantly different results in achievement and attitude? For instance, in a lesson on tick identification, would health care workers, campers and/or field workers score higher on the test than casual learners?

Would treatments that were more diverse be a better means of assessing of the effect of humor? In attempting to keep both treatment groups as equal as possible, memory aids were presented to both groups--with text only for the non-humorous mnemonic and text with cartoons in the humorous mnemonic. Normally, a traditional science lesson would not have memory aids provided.

Would it make a difference in achievement and/or attitudes, if learners were given a choice of presentation styles; thus allowing for learner control. Finally, is there a significant difference in knowledge acquisition and retention, between scientific drawings presented in a complete form rather than in a developmental sequence? The use of developmental progression of graphic displays for both treatment groups in this study may have influenced the results. Follow-up investigations are planned to address some of these questions.

CONCLUSION:

The theory behind designing computer-based-instructional courseware with the inclusion of humor was an attempt to recreate the feeling one might experience in a warm and inviting classroom. Creating a friendly atmosphere is important for general appeal, and for learners wary or emerging technologies and computers in particular, increasing the comfort level of CBI could contribute to learner acceptance of the medium. Learners are more apt to use and enjoy CBI programs that meet individual preferences, and incorporating humor can affect attitudes and may enhance some types of knowledge acquisition.

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